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THE WEAK-SIGHT OPHTHALMOSCOPE.

[Communicated for the Boston Medical and Surgical Journal.]

MR. EDITOR,—The following note, appended to the word "Augenspiegel" (ophthalmoscope) on the first page of Jäger's recent work,* gives some account of the method of examining in which weak light and the upright image are used, and refers to the importance of this method. It has already been translated into the *Annales d'Oculistique* for July and August, 1862, and seems well worth an English rendering also. Perhaps you can give it a place in your JOURNAL, and oblige

Yours, &c.

H.

I have already published, several years ago, in the *Oesterreichische Zeitschrift für praktische Heilkunde* (No. 10, 7th March, 1856), some particulars on the employment of the ophthalmoscope as an optometer. For those who may not have this paper, I take the liberty of repeating the following.

The best method of determining with the ophthalmoscope the state of the dioptric apparatus of an eye, is to observe the fundus in its virtual, upright picture by means of a mirror with strong light (concave mirror of seven inches focal distance), or, best, with weak light (mirror of Helmholtz).

The inverted, real picture does not present equally favorable circumstances and reliable tests for judging, and can, consequently, be made useful only in certain cases; for instance, when the observing or observed eye is short-sighted to a very great degree, when there are in the media diffused opacities of such intensity that they prevent a clear view of the fundus in virtual image, but allow it still in the real image, &c. To acquire the necessary expertness in using the ophthalmoscope for this purpose, one should examine normally constructed, sound eyes, accommodated for their far-point, and notice accurately the appearance of the picture and the circumstances of the observation. Especially observe the enlargement in

* Ueber die Einstellungen des dioptrischen Apparatus im menschlichen Auge. Wien. 1861.
On the States of the Refractive Apparatus in the Human Eye. Vienna. 1861.

which the picture appears, the diameter of the field of vision absolutely and relatively to the size of the pupil of the eye under observation. Observe the intensity of light and color, the sharpness of outline of the different parts; estimate the distance at which the picture appears to be; consider the refractive state of your own eye, and the kind and focal distance of the corrective glass, with the aid of which the largest distinct picture of the fundus is seen; measure, finally, the distance at which the examination can be performed easiest and for the longest time.

In judging of the above circumstances, there is no one standard for all observers. Nearly every one will designate and estimate differently from others the magnitude, color, intensity of light, the distance, &c., of one and the same picture. If, however, each observer has considered accurately and remembers the circumstances when the observed eye is in a given refractive state, all will recognize with equal certainty any deviation from this state, and, if the deviations increase in a given ratio, will be able to estimate similarly the degree of increase.

Notwithstanding the original difference in judging of the picture which is to be taken as the normal one, and notwithstanding the difference of the standard by which each observer estimates any deviation, similar deviations will be similarly estimated and a like judgment can be obtained upon the refractive state of a given eye.

We take, as the standard of comparison, the picture from a normally constructed eye when accommodated for its far-point, that is, for rays nearly parallel, and estimate the deviations of other eyes likewise when they are in accommodation for their far-point, since this state is generally easiest and surest to obtain, and if necessary can be compelled by mydriatics, and likewise is generally found in all eyes whose function is very much disturbed.

If by repeated observations we have become familiar with this normal picture, and then examine a short-sighted eye, the field of vision appears smaller, and the picture, in proportion to the degree of near-sightedness, nearer. The picture presents less intensity of light and color, but is more magnified and its outlines stand out less striking. The size of the pupil remaining the same, the whole of the papilla nervi optici is no longer seen at once, as it generally is when the eye is of normal construction and the pupil moderately wide.

We are, moreover, forced, in order to obtain a clear picture of the fundus, in proportion to the degree of near-sightedness, to use stronger concave glasses and to get nearer to the patient.

On the other hand, when the eye is hypermetropic, the field of vision is obviously extended, the picture appears much farther off, its intensity of light and color is considerably stronger, and its size remarkably diminished, while the several parts gain in sharpness of outline and the whole picture gains in expression.

In cases of very great hypermetropia, we see all around the papilla to an extent equal or greater than that of the papilla itself, so

that the picture in extent appears quite similar to the real, inverted picture of an eye with the convex glass before it.

Equally remarkable is the difference in the choice of the corrective glass. If the observer is accustomed to see the picture of a normally constructed eye without the assistance of a glass, he needs, in the case of a hypermetropic eye, a correspondingly strong, convex, corrective glass (between the ophthalmoscope and the observer), or must supply its place by arranging his eye for the near (for diverging rays).

Finally, the distance between the observer and patient during the examination is greater, often very considerable.

The above specified differences between the picture of the fundus of a short-sighted or of a hypermetropic eye and that of an eye of normal construction, stand out, proportionally to the amount of short-sightedness or of hypermetropia, more decided, and therefore clearer and more striking. Consequently, with some practice, it is not at all difficult to perceive them and to use them with certainty.

One can, on the average, attain such exactness in determining in this way the dioptric state of a given eye, that in basing the selection of a pair of spectacles on such determination, there will result at the most only an error of one or two numbers, it being generally the case that such different numbers can be used.

To acquire this expertness, it is especially necessary not only to learn the condition of one's own eye, but also to become accustomed to recognize one's own state of accommodation from the kind and degree of effort attending it (without directly measuring the distance of the point accommodated for).

The observer should, moreover, in examining with the upright picture, accustom himself generally to call upon his power of accommodation as little as possible, and always observe the fundus through the weakest corrective glass which can be used in the given case. He should accordingly endeavor to observe eyes of similar character in the same manner and with the same corrective glass.

On the observer's side, a normally constructed eye is best adapted for these examinations; yet differently constructed ones, especially slightly near-sighted eyes, can attain equal expertness and certainty in judging. As previously remarked, there would only be a difference in the standard with which the other pictures are compared and in the use of the corrective glasses in each case.

Thus we obtain in the ophthalmoscope a very important means of recognizing the refractive state of an eye, and sufficiently for all practical purposes, if the fundus can only be seen. Independent of the natural ability and education of the patient, of his good or bad intentions, of the degree of functional ability of the organ, as well as of the age of the patient, and so in the case of the infant or of the aged, of an eye which sees or which is blind, the physician bases his judgment on objective appearances alone.

Every physician, especially in the army or in court, in all cases in

which the patient, for whatever cause, is unable to give a definite account, or if the latter cannot be considered decisive, will only too frequently have occasion to recognize how valuable is such a determination, not dependent on the statement of the patient.

So exact an insight into the dioptric state, of an eye, with such certainty and general applicability, is not to be obtained by any other method hitherto known; but yet the employment of the ophthalmoscope for this purpose has not hitherto been sufficiently regarded.

The chief cause of this is probably, as it seems to me, the circumstance that it is so often the case that the examination of the picture in inverted image is preferred, and almost alone practised.

The advantages of the inverted picture, its intensity of light and color, the favorable relation of the degree of enlargement to the diameter of the field of vision, whereby it is possible to see a larger portion of the fundus at once, &c., are repeatedly overestimated, and the advantages of the upright image, especially with weak light, disregarded; the latter method has been considered more difficult, less efficient, and consequently not necessary and even superfluous, and in some quarters its use is looked upon as the sign of partiality and whim. Some observers content themselves with the advantages of the one method in making the diagnosis, and give up those of the other, though often with considerable loss to themselves. I use constantly both methods, and seek to make the most of the peculiar advantages of each in appropriate cases; just as in general I endeavor to neglect no means that seem to promote the certainty and accuracy of the diagnosis. It seems to me, therefore, that while not disregarding the advantages of the one method, I may also be permitted to affirm the excellencies of the other; and even, after much experience, that it is obligatory to refer to them.

The examination in the upright picture, especially with the weak-light mirror, is practicable in the great majority of cases without dilating the pupil. This is an advantage of no slight practical value, inasmuch as the artificial dilatation, so frequently necessary for examination in the inverted picture, causes, if some power of vision still remains, trouble and alarm to the patient, owing to his accommodation being interfered with and to the glare of light—and also, inasmuch as herewith various reflections and imputations are unnecessarily occasioned against the physician, especially if the course and termination of the disease are not perfectly favorable.

The amount of light necessary for the real (inverted) picture is to some eyes troublesome, even injurious, and owing to the restlessness thereby occasioned in the patient, serves often to render the examination more difficult, and even to prevent it.

Although in general the repeated and protracted use of a strong-light mirror in the case of one and the same eye occasions no injurious consequences, yet there are cases in which this is by no means a matter of indifference, and I have seen several times, particularly

in cases of inflammatory retinal affection, a remarkable aggravation of the symptoms, and even blindness set in, during or immediately after the examination.

The weak-light mirror (with the plane glasses of Helmholtz) gives in most cases a picture quite bright enough for the most accurate diagnosis. It is of the greatest value for the recognition of anomalies in the transmission of the rays through the transparent media, and of slight or diffused opacities in the media and fundus, and is often the only means of this recognition. It is almost the only means of recognizing, with sufficient certainty, slight differences of color and weak tints in the fundus, and especially on the optic nerve.

The great amount of enlargement in the upright picture, with the small degree of spherical aberration and the nearness of the picture, are, as regards the discernment of the size and situation of parts of the picture, the recognition of details, and frequently for the diagnosis, of equal value to the magnifying power of a microscope. A still greater degree of magnifying power in the ophthalmoscope, as well as the microscope, would indeed often be desirable; but why should we fail to prize that already obtained of fourteen diameters in comparison with that of from two to five diameters in the inverted image, and give up its advantages for the diagnosis.

Although in many cases the examination in the inverted picture is sufficient, and often the only one possible, yet in others the upright picture is altogether more advantageous, and frequently the only decisive one. The real (inverted) picture affords a quick survey of the whole, and a rapid view of the striking appearances; but only the upright in connection with it renders possible and allows a more exact study, a more complete and reliable diagnosis.

It is owing to this that in the construction of my ophthalmoscope which I have hitherto used (made by Kraft, in Vienna), I was careful above all to provide for the examination with weak light as well as strong, in the upright as in the inverted picture, although hereby the size and price of the instrument were increased.

Finally, as to the attainment of sufficient dexterity in examining in the upright and inverted pictures, the former method presents no greater difficulties than the latter; on the contrary, for those who have never used an ophthalmoscope it is more frequently the case that the fundus is easier to be seen in the upright picture, and this picture clearer and easier to be understood. * * * * *

ON THE CO-EXISTENCE OF TUBERCLE AND CANCER.

By D. RUTHERFORD HALDANE, M.D., PATHOLOGIST TO THE ROYAL INFIRMARY OF EDINBURGH.

WHETHER or not cancer and tubercle can co-exist in the same organism, is a question which has been frequently discussed, but which can scarcely be said to have been satisfactorily solved.

Some pathologists, perhaps the majority, have maintained that the two diseases are mutually exclusive, that they depend upon different or opposite constitutional conditions, and that the existence of one indicates the impossibility of the simultaneous presence of the other. Others, again, have not considered cancer and tubercle as of so decidedly specific a character; and, while allowing that the two are seldom associated, are quite prepared to meet with cases where they shall be found to co-exist. It is not my object to endeavor to solve this question in an absolute manner; but a case which lately came under my notice has led me to bring together a few general remarks on the subject.

In speaking of the possibility of the co-existence of tubercle and cancer, it must of course be premised that the only cases to be referred to are those in which both diseases are in an active condition, for that one may succeed the other is perfectly well known, and universally acknowledged. The order of succession is not, however, indifferent, for, in the great majority of cases, tubercle is the original, cancer the secondary disease. This mode of sequence probably depends upon the circumstance that tubercle is generally a disease of early, cancer of mature or advanced, life. In no small proportion of cases where cancer has been the cause of death, cretaceous concretions, or tubercle in a retrogressive or stationary condition, may be found in the upper part of the lungs. These cases, however, are not available in assisting us to answer the question proposed, for it is quite intelligible that the tubercular diathesis may have been recovered from, and that, therefore, there was no impediment to the development of the cancerous.

A priori considerations would certainly lead us to believe that the presence of the one morbid condition is incompatible with the simultaneous existence of the other. Neither tubercle nor cancer can be looked upon as a mere local condition; for even granting that either may be in the first instance generated by external causes, it cannot be denied that when the dyscrasia has been once established, the manifestations in the two conditions are of a different character. Our views on this subject, however, must be regulated by the opinions we entertain as to the mode of origin of new growths—a question which lies at the very foundation of pathology.

The doctrine which, till lately, was universally accepted, was this: owing to certain causes, known or unknown, an exudation from the bloodvessels takes place; in healthy persons, the matter poured out assumes more or less of the characters of the tissue in which it is effused, becomes converted into connective tissue, or degenerates into pus; while, if the system be under the influence of the tubercular or cancerous cachexia, the effused material is converted, under the influence of the constitutional condition, into tubercle or cancer, as the case may be. Granting this view to be correct, it seems impossible that cancer and tubercle could co-exist,

for we cannot well imagine that the system could be under the influence of two such different dyscrasie at the same time. Arguments, however, are not wanting to show that such a mode of viewing the subject is erroneous. Did new formations take place in the manner alluded to, every exudation in a tubercular individual would necessarily be tubercular; but every-day experience testifies to the contrary. Pleurisy, in a patient suffering from phthisis, is not necessarily or even generally tubercular; connective tissue is organized, and adhesions are formed in precisely the same manner as in an individual in whom there is no constitutional taint. It is indeed said, that as the blood is continually undergoing changes, an exudation at one time may be very different from what it was at another; and that even when the constitution is thoroughly cancerous or tubercular, simple exudations may be poured into tissues as the result of recent wounds or injuries.* This, however, would not explain another circumstance which is frequently met with. In cases of tubercular pleurisy, pericarditis, or peritonitis, the organized exudation will generally be found to consist of two parts, one portion being manifestly composed of tubercle, the other of ordinary, or what we may call healthy, connective tissue. Here the matters forming the new structures must, according to the exudation theory, have been poured forth from the same blood-vessels, into the same tissues, at the same time, and under the same constitutional circumstances, and it is inconceivable that if differences in the product depended exclusively upon differences in the inherent composition of the exudation, two such different materials could have been contemporaneously developed.

Another argument to the same effect is derived from what is seen in cases of constitutional syphilis. The system is here under the influence of a peculiar dyscrasia, which manifests itself by deposits or exudations of a particular kind, and by influencing in a peculiar manner certain of the vital processes. On the hypothesis we are now considering, any healthy action should under these circumstances be impossible, every exudation should bear the special syphilitic stamp. This, however, we know not to be the case; wounds may heal, and fractures unite, as rapidly and as soundly in the syphilitic as in the healthy.

The other doctrine as to the genesis of new formations, has been most clearly enunciated by Virchow. Its supporters maintain that an exudation is not poured out directly from the bloodvessels, but that every new growth takes its origin from the tissues themselves. Cells can no more arise in situations where no cells previously existed, than new organisms can be produced by spontaneous generation. It can scarcely be doubted that in the physiological renovation of tissues the principle of *continuous development* holds good; and the best investigations go to prove that pathological

* Bennett's Principles and Practice of Medicine, 3d Edition, p. 151.

formations obey the same law. There is now an overwhelming mass of evidence with regard to the origin of pus; and the evidence is scarcely less strong in the case of tubercle and cancer. Why the new tissue should assume a peculiar form, we do not know. We know that when all is going on normally, the process of decay is exactly balanced by the process of repair; although the elements of the tissues are constantly undergoing change, this change takes place so silently, and so continuously, that the parts appear to remain always the same. But now, let an irritant be applied to the tissue where everything was going on so smoothly. A tumultuous process is immediately set up; there is rapid destruction of tissues, but equally rapid repair; as Mr. Simon has well expressed it, "the appreciability of the opposed results is in itself a differential mark of inflammation."* The results even in the most healthy inflammations are, however, far inferior to the reproduction of tissue which goes on in health. The type of inflammatory products is invariably low; the higher tissues, such as nerve or muscle, skin or cartilage, are incapable of being thus produced. Now it is perfectly conceivable that the nature of the irritant may determine the character of the future product. Of this principle we have already some undoubted examples. The bite of a poisonous snake occasions an inflammation which runs on rapidly to gangrene. The irritation of a short hot pipe is believed to lead to epithelioma of the lip; while the frequent contact of soot leads to a similar affection of the scrotum. It is probable that this principle has wider applications than we are yet aware of, and that special forms of disease are often to be explained by something special in their causation.

No doubt there is a difference in the character of the tissues themselves which explains their greater or less liability to particular forms of disease. The tissues of the soundest and healthiest individual are susceptible of inflammation, but it is questionable whether the same can be said with regard to tubercle. It is doubtful whether the ordinary causes of tubercle, such as insufficient food and clothing, damp, cold, impure air, and deficiency of light, can develop the disease in a sound constitution, without the slightest hereditary taint. Virchow, indeed, believes that every dyscrasia has a local origin; in other words, that there is first a local disease, that it is the cause of the poisoning of the blood, and that when the poisoning has once taken place, various secondary phenomena, manifestations of the now established dyscrasia, show themselves. He denies that certain changes can persist in the blood considered as an independent fluid, but maintains that, for the keeping up of a permanently morbid condition, there must be a permanent supply of noxious material from other sources. In pyæmia, for instance, the constitution of the blood is generally altered in two ways: there is the presence in it of small masses of fibrine derived from

* Holmes's System of Surgery, vol. I., p. 6.

the disintegration of thrombi, and giving rise by embolism to metastatic deposits; and there is absorption of putrid juices, causing unhealthy and gangrenous inflammation. It cannot be questioned that there is much truth in this doctrine, and it is possible that future researches may show that it is of general application; but in the present state of our knowledge this cannot be said of it, for there are various constitutional conditions for which we have hitherto been unable to discover a local origin. This is especially true with regard to tubercle, for very often, before there is the slightest manifestation of local disease, a peculiar condition is established, which physicians have designated as the pretubercular stage of phthisis. The same is probably true with regard to cancer, though to a less extent, as the disease is less strikingly hereditary, and the early stage of the diathesis is less strongly marked. But although there be an early stage of constitutional affection previous to the development of the local disease, it does not follow that the first stage is to be considered as special—that is to say, as the manifestation of a specific dyscrasia. It may, in fact, be nothing more than a condition of generally impaired nutrition and constitutional weakness (which may or may not be hereditary), which makes the individual more susceptible to the exciting causes of the particular disease.

One who holds, though even in a somewhat modified form, the views of Virchow, has much less difficulty in acknowledging the possibility of the co-existence of tubercle and cancer, than one who clings to the exudation theory. I fully believe that both tubercle and cancer are to a certain or even to a great extent constitutional, and that the constitutional conditions connected with them are of a different character; still I have no difficulty in believing that the two morbid conditions may occasionally co-exist. It is, however, only by an appeal to facts that a question of this kind can be decided, for no pathological laws are as yet sufficiently established to enable us to refer to them for a solution of such problems. So far as my own experience goes, I have never met with a case where I was satisfied that cancer and tubercle co-existed in an active form. Such cases have undoubtedly been recorded, and some unquestionably may have been instances of the kind; but I am satisfied that not unfrequently the observers were mistaken; in some the characters of the morbid products having been misunderstood, in others the tubercle having certainly been in a state of obsolescence. In illustration of the fallacies to be guarded against, I subjoin a case in which a mistake might readily enough have been committed.

Mary L., aged 40, was admitted, on account of cough and debility, into the Royal Infirmary, under the care of Dr. Gairdner, on the 22d of April, 1862. She stated that, though not robust, her health had been generally good, but that since the birth of her youngest child (four weeks before admission) she had suffered from cough, accompanied with febrile symptoms. She stated that she had never had hæmoptysis, and had never suffered from pain in the chest.

When admitted she was in a feverish condition, the skin was hot, the tongue dry and cracked. There was much cough, with scanty muco-purulent expectoration. On physical examination, there was no dulness on percussion, but the auscultatory signs of bronchitis were present, chiefly on the right side of the chest. About ten days after admission, percussion was found to be markedly dull over the right side. The following was her state on the 3d of May:—

Countenance pallid, no lividity, no flush. Voice broken and hoarse. Respirations, 36. No very marked dyspnoea; lies equally well on either side, or on the back, the latter being her usual position. When closely interrogated, could hardly be brought to admit any pain during the course of her complaint; but after leading questions, referred to the right side as the seat of a little uneasiness. Percussion quite dull over the right side of the chest from above the clavicle to the level of the nipple. Little respiratory sound in front, except above the clavicle, and there chiefly tubular. Sputum muco-purulent; mucus and pus about equally mixed; pus in flakes, not decidedly globular.

On the 2d of June her condition was the following:—

Patient has occasionally tried to get up of her own accord, but has generally been obliged to lie down again soon. Is now very feeble and pallid; there is scarcely any flush whatever; febrile symptoms much less distinct than formerly. Tongue almost perfectly natural, but retaining marks of former cracking. Has still no complaint of pain; chief cause of suffering is cough, which is fully more severe than ever. The dulness on percussion over the right front is diminished, being replaced in part by tympanitic or dull tympanitic resonance. Auscultatory signs, pretty distinctly those of progressive excavation of right front. Expectoration has been increased in quantity, and has become more and more purulent, but is still frothy, and not distinctly globular in character. Last night, for the first time, the sputa were tinged with a little blood. Has had very little diarrhoea.

She became gradually weaker, and died on the 10th of June.

The opinion entertained of the patient's case during her life was that she was suffering from acute phthisis, causing rapid breaking down of the substance of the right lung. The following were the appearances found on dissection:—

Surface of the body very pale; abdomen wrinkled.

On proceeding to remove the right lung, firm pleuritic adhesions were found over the upper two thirds of the organ; in separating these, a very superficial cavity in the anterior part of the lung was opened into. The upper and middle lobes of the right lung were found occupied by numerous communicating cavities exactly resembling such as result from the breaking down of tubercular matter. The walls of the cavities were irregular, coated with a soft yellowish matter, and in many places were crossed by fibrous

cords, the remains of obliterated, or nearly obliterated, blood-vessels. In the pulmonary tissue between the cavities were numerous small, opaque, yellow masses. The lower lobe of the lung was in a condition of solid œdema, but contained no deposit. In removing the lung, its root was found to be much thickened by a deposit which surrounded and separated the normal structures. This infiltrated matter was of a pinkish white color, slightly translucent in appearance, of softish consistence, and presented all the physical characters of cancer; on scraping it, an abundant creamy juice, readily miscible with water, exuded. The growth was found to consist of degenerated bronchial glands, which started from the bifurcation of the trachea and followed the root of the right lung; it extended for about half an inch into the substance of the lung, and there ceased abruptly. The normal structures forming the root of the lung were much compressed; the bronchus was converted into little more than a slit, and the pulmonary artery and veins were much diminished in calibre.

The left lung was perfectly healthy, containing no trace of abnormal deposit: the bronchial glands at the root of this lung were also natural.

The liver was healthy. The kidneys were of normal size; in each were several small rounded masses, about the size of pepper-corns, of pinkish color and rather soft consistence. Other organs natural.

On *microscopic examination* of the creamy juice squeezed from the matter in the root of the right lung, it was found to contain an enormous number of naked nuclei, about $\frac{1}{2000}$ to $\frac{1}{1500}$ of an inch in diameter; there was a comparatively small number of rounded or oval cells, pale, but tolerably distinct, and each containing a nucleus similar to those floating loose; finally, there were a few compound granular corpuscles, and some granular matter. On the addition of acetic acid the cells became still paler; the nuclei, on the other hand, were rendered more distinct, but appeared somewhat diminished in size. On examining some of the soft yellow matter from the right lung, which to the naked eye bore a strong resemblance to tubercle, no distinct cells or nuclei could be seen; it appeared to consist entirely of broken down matter, mostly granular, but in some places having a tendency to obscure fibrillation, with some compound granular corpuscles. The structure of the nodules in the kidneys was found to be precisely similar to that of the degenerated bronchial glands in the root of the right lung.

It must be allowed that this case was in some respects a very deceptive one. Without speaking of the symptoms, the appearances presented on dissection were at first precisely such as are found in tubercular disorganization of the lung—adhesions of the pleura, a large cavity broken into during removal, the walls of which were lined with a soft cheesy matter and crossed by obliterated blood-vessels, seemed to leave little doubt as to the nature of the case. But when the root of the lung came under observation, its condi-

tion was evidently due to cancerous affection, beginning in the glands, and extending into the substance of the lung. Was this, then, a specimen of conjoined cancer and tubercle? I think not. The microscope showed distinctly the cancerous nature of the glandular disease, but threw no more than a negative light upon the condition of the lung. It must, however, be borne in mind that the histological characters of tubercular deposits are frequently ill-defined, particularly where considerable disintegration has taken place. Accordingly, as the absence of the so-called tubercle-corpuscles could not be considered sufficient evidence of the non-tubercular character of the deposit, its nature had to be decided upon from other considerations. And here a point of great importance was the absolute limitation of the deposit to a portion of one lung. We not uncommonly find one lung in an advanced state of tubercular disease, while the other is comparatively unaffected, but it would, so far as I know, be unprecedented, to have *absolute* freedom from disease in one lung, while the other was in the condition observed in this instance. Under these circumstances, and as there was no trace of tubercle either in the lymphatic glands or in the intestinal mucous membrane, I had no hesitation in coming to the conclusion that the affection of the lung was non-tubercular. If not tubercular, what then was it? The idea of cancer naturally suggests itself; but this too, I think, must be negatived. In a pretty extensive experience of cancer of the lung, I have never seen it produce destruction of the character met with in this case. Cancer is generally found in the lung in the condition of nodules or of infiltrated masses; in but few cases is softening found to have taken place, and when met with, it has been rather the result of a process of sloughing than of a comparatively slow and gradual disintegration; softening of cancer, when it does occur, takes place too rapidly to allow the neighboring bloodvessels to be sealed up. The microscopic appearances were also opposed to the identity of the deposits in the root of the lung and in its substance. Had the growth in the lung been cancerous we should undoubtedly have found cells, or more probably free nuclei, to testify to what had been the original character of the lesion.

On the whole, I came to the conclusion that the disease in the lung was the result of a low form of inflammation, determining the presence of a fibrinous material which subsequently underwent disintegration. It is now generally recognized by pathologists that all cases of so-called pulmonary phthisis do not result from tubercle, but that some are occasioned by a low grade of the inflammatory process. I believe that this was the case here, and that the pressure upon the important parts in the root of the lung was the determining cause of the lesion. I have more than once seen cases where the pressure of an aneurism on the root of a lung has been connected with very similar appearances, and where the entire absence of tubercle from other organs rendered it highly improbable that the deposit was specific.—*Edinburgh Med. Journal.*

Reports of Medical Societies.

EXTRACTS FROM THE RECORDS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. BY FRANCIS MINOT, M.D., SECRETARY.

Nov. 23d.—*Gun-shot Injury of the Head, involving the Brain.*—Dr. JEFFRIES WYMAN showed the specimen, and read the following account of the case, which was communicated by Dr. Francis H. Brown, of Cambridge.

G. G., 16th Mass. Vols., was wounded Aug. 30th, at Bull Run, and admitted to the Judiciary Square Hospital, Washington, during the night following. On examination, he was found to have a stellate wound immediately over the centre of and half an inch above the right supra-orbital ridge; behind this, a perforation of the frontal bone, with cleanly cut edges. By such amount of probing as seemed justifiable, no ball could be felt.

On entrance, he was perfectly conscious; his conversation and motions did not differ from those of the patients around him. He considered himself not seriously injured, and insisted that no ball had entered his head. His appetite was good, and all the functions were carried on normally. Got a cold-water dressing. For two days he was about the wards a part of the time, and was able to help himself; had no pain; the most of the time, however, he was in bed, resting on his back.

Sept. 3d.—Was found in the morning in a comatose condition, lying on his back—evidently without suffering; in no way sensible to stimuli; pupils natural; respiration normal. No apparent change in wound.

4th.—Coma more marked; otherwise as yesterday. Still on his back.

5th.—Died at 6.15, A.M. Comatose to the last.

The autopsy was made, and the specimen prepared, by B. G. Wilder, Medical Cadet U.S.A. The ball entered the anterior lobe of the brain at a point corresponding to the perforation of the skull, carrying with it fragments of the frontal bone, and traversed the substance of the brain obliquely to the anterior cornu; the tract of the ball then changed its direction, and passed, parallel to the median line, within the cavity and along the whole length of the lateral ventricle; at the posterior cornu the ball passed out of the ventricle, and, on removing the brain from the skull, dropped from a small cavity in the posterior surface of the hemisphere. At the point of entrance was an abscess the size of a walnut. The parietes of the ventricle were considerably abraded, and these, and the substance of the brain along the tract of the ball, were infiltrated with pus. A small amount of pus was found in the left ventricle.

The position of the ball at any one time could not, of course, be determined; but the appearance of the brain, joined with the history of the case, would indicate that the ball, at the time of the wound, entered the brain as far as the anterior cornu, the bits of bone and *débris* causing the abscess near the surface; that then, as the patient was lying on his back, the ball yielded to gravity, sloughed through the parietes of the ventricle, passed along its cavity, again sloughed through the parietes, and was found as before reported.

Nov. 23d.—*Perforating Ulcer of the Stomach.*—Dr. F. E. OLIVER reported the following case.

"Mary B., aged 48, single, housekeeper, was seized, while at the breakfast table, on the morning of Nov. 10th, with severe pain in the precordial region, which rapidly increased. She was immediately seen by Dr. Cullis, who administered some preparation of camphor and digitalis, and applied hot fomentations over the region of the heart; the latter not being well borne, seeming to aggravate the pain, cold applications were substituted, from which, with the remedies administered, the patient seemed to obtain slight temporary relief.

"At 12 o'clock I saw her, when Dr. C. very courteously gave the patient into my charge. She was at this time in a sitting posture, with the head bent over and resting on a table, groaning with pain, which she referred to the region of the heart, and which extended down the left arm. Complexion was pallid. Pulse 76. Respiration somewhat labored. The bowels had been moved slightly in the morning, but the patient had been somewhat constipated for some days. There was some thirst. On examination of the heart, a slight but distinct murmur was audible, accompanying the first sound, and an occasional intermission was noticed in the pulse.

"Little could be gained as to the patient's previous history, excepting that her general health had been for the most part good. From the fact, however, that she had occasionally been known to take capsicum, it may be supposed that she at times experienced some unpleasant feeling at the stomach. She stated that she had once before had an attack similar to this, and that her mother had died of disease of the heart. From all the symptoms and circumstances attendant upon the case, it was at first inferred that it might be some neuralgic affection of the heart; but as the pain soon after rapidly extended downward, and became general over the region of the abdomen, accompanied with exquisite tenderness, and the pulse was now observed to increase in frequency, it became evident that the trouble was of a far different nature. She was unable to bear the slightest pressure upon the abdominal walls, and fluids taken to quench her constant thirst were immediately rejected; much wind was also constantly ejected from the stomach. Peritonitis, from some cause, was the inevitable diagnosis.

"From the first, opiates were given, and warm fomentations applied over the abdomen, which seemed to give partial relief, but she was unable to lie down at any time. Dr. Coale saw her, in consultation, at 5 o'clock. At this time the pulse was 126, and there was tympanites. At 7, the pulse was almost imperceptible, face bathed in perspiration, breathing rapid, and the patient near her end. She at this time made several ineffectual attempts to evacuate the bowels. She died at 10½ P.M., fourteen hours after seizure, her mind remaining perfectly clear until twenty minutes before death.

"From the suddenness of the attack, perforation of some portion of the intestinal tract suggested itself as the probable cause of the foregoing symptoms.

"A *post-mortem* examination was made by Dr. Coale and Mr. Marcy, Nov. 12, at 9½ A.M., thirty-five hours after death. The only marked appearance of the body exteriorly was fulness of the abdominal walls. On opening this cavity, the small intestines were noticed to be pretty generally injected, and floating in about three and a half pints of what appeared like purulent serum. On following up the intestinal tube, no lesion was found until the stomach was reached, where a circular opening discovered itself in its anterior walls, and about mid-

way between the two extremities of this organ, from which the same purulent-looking matter as that before mentioned was still issuing. The peritoneal membrane of the diaphragm was also much inflamed, which might probably account for the character and seat of the pain in the early stage of the attack. The pericardium contained from one half to an ounce of bloody serum. The heart was enlarged and softened, the right auricle quite thin, and the wall of the left ventricle thickened. The mitral valve presented a slight thickening. The lungs were sound."

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, DECEMBER 25, 1862.

WE print below Dr. Letterman's Circular to the different army corps, containing the new medical supply table. This is regarded by experienced army surgeons as a great improvement on the old table, which was much too cumbrous for an active campaign. Heretofore large quantities of medical stores have been necessarily left behind and sacrificed for want of means of transportation. The new medicine chests, as well as the new hospital knapsacks, are said to be a great improvement on those in use in our army up to the present time. As we have not seen either of these or read any detailed description of them, we are unable to say whether they compare favorably with those used by other armies. The French ambulance knapsack, described in our last, is so admirable a contrivance that we hope it may have been copied in the one adopted for our army.

CIRCULAR.] { MEDICAL DIRECTOR'S OFFICE, ARMY OF THE
POTOMAC, OCTOBER 4, 1862.

MEDICAL SUPPLY TABLE FOR THE ARMY OF THE POTOMAC.

FOR FIELD SERVICE.

Experience has shown that the Medical Supply authorized by the Regulations for a Regiment for three months is too cumbrous for active operations, instances being frequent where the whole supply has been left on the roadside.

Hereafter, in the Army of the Potomac, the following supplies will be allowed to a Brigade for one month, *for active field service*, viz.:—

One Hospital Wagon, filled.

One Medicine Chest for each Regiment, filled.

One Hospital Knapsack for each Regimental Medical Officer, filled.

The supplies in the list marked (a)* to be transported in a four-horse wagon.

The Surgeon in charge of each Brigade will require and receipt for all these supplies, including those in the Hospital Wagon, and will issue to the senior Surgeon of each Regiment the Medicine Chests and Knapsacks, taking receipts

* Except the following articles, which will be carried in the ambulances, in the box under the driver's seat.

ARTICLES.	IN EACH AMBULANCE.	ARTICLES.	IN EACH AMBULANCE.
Beef stock, 2-lb. cans	No. 3	Spoons, table	No. 6
Buckets, leather	" 1	Tumblers, tin	" 6
Kettles, camp	" 1	Hard bread	lbs. 10
Lantern and candle	" 1		

therefor. The Hospital Wagon, with its horses, harness, &c., will be receipted for by the Ambulance Quartermaster.

The Surgeon in charge of the Brigade will issue to the Medical officers of the Regiments such of these supplies as may be required for their commands, informally, taking no receipts, demanding no requisitions, but accounting for the issues as expended.

The Surgeons in charge of Brigades will at once make out requisitions in accordance with these instructions, and transmit them, approved by the Medical Directors of Corps, to the Medical Purveyor of this Army. These supplies being deemed sufficient for one month only, or for an emergency, Medical Directors of Corps will see that they are always on hand, timely requisitions being made for that purpose.

[illegible]

ARTICLES.	IN HOSPITAL WAGON.	(a) IN FOUR-HORSE WAGON.	ARTICLES.	IN HOSPITAL WAGON.	(a) IN FOUR-HORSE WAGON.
Tongue depressor (hinged)	No. 1		Requisitions, returns and reports	copy, 1	
Tourniquets, field	" 8	No. 8	Ink (2-oz. bottles)	No. 2	No. 8
" " screw	" 2	" 4	Inkstand, travelling	" 1	
Trusses	" 4	" 16	Envelopes	" 100	" 100
DRESSINGS, &c.			Paper, wrapping, white and blue	qrs. 2	qrs. 2
Adhesive plaster	yds. 5	yds. 20	Paper, writing	" 4	" 8
Binder's board, 2½ by 12 in.	pcs. 8	pcs. 48	Pens, steel, with holders	doz. 1	doz. 4
" " 4 by 17 "	" 8	" 48	Pencils, lead	No. 6	
Cotton bats	bats, 2	bats, 4	Portfolio	" 1	
" wadding	sheet 1		Sealing wax	stick, 1	
Flannel, red	yds. 4		Mucilage	bot. 1	
Gutta percha cloth	" 2		BEDDING, &c.		
Ichthyocolla plaster	" 5	yds. 20	Blankets	No. 20	No. 40
Lint, patent	lbs. 4	lbs. 24	Gutta percha bed covers	" 8	
" scraped	" 2		FURNITURE, &c.		
Muslin	yds. 10	yds. 20	Basins, tin (small)	No. 2	No. 8
Needles, 25; cotton, 1 spool;	case, 1		" wash, hand	" 3	" 8
thimble, 1	yds. 2½		Bed pans, delf, shovel shape	" 1	" 4
Oiled muslin	" 2½	" 20	" metal	No. 2	" 12
Pencils, hair	No. 12		Buckets, leather	doz. 8	doz. 8
Plaster of Paris, ground	lbs. 50		Corks, assorted	No. 1	No. 4
Pins	paps. 2	paps. 4	Corkscrew	" 1	
Roller bandages, assorted	doz. 16	dz. 100	Funnel, ½-pint (glass)	" 1	
Silk, green (for shades)	yds. 1	oz. 4	Grater, nutmeg	" 1	
" surgeon's	oz. 4	sets, 4	Hatchet	" 1	
Splints	set, 1	No. 20	Hone	" 1	
" Smith's anterior	lb. ½	lb. 1	Kettles, camp (2-galls.)	No. 3	No. 12
Sponge, fine	No. 8	No. 16	Lanterns, glass	" 1	
Suspensory bandages	pcs. 4		Measure, graduated, 2-oz	" 1	
Tape		lb. 1	" " minim	" 1	
Thread, linen	lbs. 10	No. 40	Medicine measuring glasses	" 2	
Tow	No. 12		Mill, coffee	" 1	
Towels	lb. ½		Mortar and pestle	paps. 2	
Twine			Pill boxes	" 1	
BOOKS, &c.			" tiles	No. 1	
United States Dispensary	copy, 1		Razor and strop (in case)	box, 1	
Surgery, Erichsen's	" 1		Scales and weights	No. 1	
" Smith's Handbook	" 1		" " large	" 1	
" Sargent's Minor	" 1		Sheepskins, dressed	doz. 6	
Gun-shot W'ds—Longmore	" 1	cop's 8	Spoons, table	No. 2	
Blank books	" 2		Spatulas, 3 and 6 in.	" 1	
" " quarto	" 1		Tumblers, tin	No. 2	No. 6
Case book	" 1		Urinals, glass	doz. 2	" 4
Register of patients	" 1		Vials, assorted		
Order and Letter book	" 1				

The ambulance boxes will be kept locked. The surgeon in charge of the Brigade will keep the keys, and, by weekly inspections, ascertain that each ambulance has its full supply.

Whenever practicable, one ambulance will follow in the rear of the Regiment on the march, to transport the Medicine Chest, Knapsacks, and any urgent cases of sickness or wounds.

When the ambulance cannot accompany the Regiment, one Knapsack will be carried by an orderly, with the command, and the Medicine Chest and remaining Knapsacks will be placed with the Hospital Tent and other Hospital Furniture, in the wagon allowed each Regiment for that purpose.

The hard bread can always be obtained from the savings of the Regimental Hospital.

JONA. LETTERMAN, *Med. Director.*

EXAMINATION OF RECRUITS.—We print the following letter because we think too much can hardly be said on the subject, until these outrages on common honesty, this barefaced violation of every sentiment of professional honor by men claiming to be physicians, are put an end to. It is hard indeed that it is possible for any man thus to impose on the liberality of the government, and we think an act should be passed, depriving all enlisted men, who on a second examination are manifestly unfit for service, of all right to any subsequent pay. This might be a hardship in some instances, but there is too much of this trading in bodily infirmities by men who know at the time they enter the service that they are entirely unfit for military duty. As for the physicians who furnish such recruits with certificates of fitness, they should be known and held up for the contempt of the community; in no other way can they be adequately punished. If our correspondent will furnish us with the needed evidence, we will publish the names of these unworthy members of the profession.

MR. EDITOR,—I am glad to see occasional mention in the JOURNAL of the negligence or culpability—call it what you will—of our surgeons in the examination of recruits. Let me give you a few data from the camp under my care. Two men were enlisted one week ago to-day—on Tuesday, one came to the hospital showing cicatrices almost covering the right arm, the result of old disease, the limb much atrophied and weakened. The next day the other came, complaining of rheumatism, which had long been chronic, with legs œdematous and distorted. Within a week there have come under my notice—recent recruits—a man with varicose ulcer of three years' standing; one with old fracture at the ankle joint, with atrophy and stiffness of the leg; one with only *six* teeth in his head, and these in such a condition that I removed them *all* at one sitting; one with advanced phthisis; one with senile bronchitis and chronic rheumatism, and 58 years of age; and of all these, the only ones who are not recent recruits have spent most of their term of service in the hospital. Should this be? Do our surgeons consider that they sign for each man (or should do so) a certificate that they have "on honor carefully examined Blank and find him fitted to discharge the duties of a soldier"? Do they think it *honorable*, to say the least, to send men into service who will in the first place receive twenty-five dollars as bounty on enlisting, and seventy-five at the end of the war—probably a bounty from a city or town—then thirteen dollars a month while in service, and aid to families—and after all this, to be doing *nothing* in return; but, instead, to be lying in a hospital, even before they leave the State, at an additional expense to Government of perhaps eight or ten dollars a month? What does it mean, when we have express orders to follow Tripler in our examinations—and he directs to examine the recruit *stripped*—that some men say they were not even *seen* by the surgeon, and a *great many* that they were not required to remove their clothes?

In my enumeration above, I did not by any means exhaust my list. I neglected entirely to mention the very numerous cases of hernia, varix, constitutional syphilis, and other defects in men who have been examined (?) by surgeons and pronounced fit for service.

I am somewhat amused at the order of the Surgeon-General printed in this week's JOURNAL. His elaborate and ideal diet table *cannot* be carried out, I am quite sure. The order, too, regarding cubic space

is all right in *theory*—but what is to be done? You say, too truly,
 “necessity knows no law.”

Truly yours,

December 19th, 1862.

F. H. B.

MR. EDITOR,—Recollecting the impression that the first sight of an “ambulance” produced upon me, I was not surprised to find in your pages the anxious inquiry made by one of your friends for a substitute. Allow me to offer him, through you, the following suggestions. Any heavy country wagon will answer—the cotton wagons of the South being the kind I have seen used, but the large “U.S.A.” wagon is perhaps even better. Draw a piece of tent cloth over the standards or sides of the wagon, not too tightly, and fasten it firmly. You will find this a cool and elastic resting-place for a wounded man, free, or nearly so, from that horrid ambulating motion which is quite disagreeable enough to give a name for the “machine” which produces it.

AN EX-SOUTHERN APOTHECARY.

Boston, December 14th, 1862.

P. S.—If any of the government officers having control of the matter are as anxious for a “substitute” as your friend appears to be, they can secure some assistance from one who has had experience in the suffering occasioned by riding when unable to help himself, on application to

W. H. B.

Our correspondent evidently refers to the two-wheeled ambulance, which is universally acknowledged to be the perfection of abominations. The wagon which he describes as a substitute for it answers very well to the description of the four-wheeled ambulance, used to a considerable extent in our army. The latter is vastly superior to the former, as it preserves a more uniform level, the shock caused by inequalities in the road is much less, as the weight is distributed over a larger number of bearing points, and there is none of the up-and-down motion which is caused by the movements of the horse in the former, and which must be agonizing indeed to a wounded man. We doubt if any very great improvement can be made in the light four-wheeled ambulances now in use, so far as making them easier for the patients is concerned. At best they must be beds of torture to those doomed to a long journey in them over the rough roads of the South. Indeed, in our opinion, the greater part of the complaint against ambulances in general should more properly be made against the roads over which they must be driven. The vehicles must be made strong, with springs of considerable firmness, to resist the excessive jolting, which the want of a smooth piece of road anywhere of more than a few feet in length, at the present season, makes continuous and inevitable.

DURATION OF LIFE IN SWEDEN.—From official details just published, it appears that the average duration of life in Sweden during the eighteenth century was thirty-four years for men and thirty-seven for women; it is now forty-one and forty-six respectively. This is not owing to any great tendency to longevity, but rather to a diminution of deaths in the earlier stages of life, since only three-twentieths of the number of infants born die in the first year of their existence. Among the causes which have tended to increase the average of life in Sweden vaccination holds the first rank. A hundred years ago one seventh of the deaths were attributable to smallpox, while now there is scarcely one death in a thousand owing to that disease.—*London Lancet*.

AMPUTATIONS AFTER THE BATTLE OF CORINTH.—Dr. E. Andrews, Surgeon of the 1st Illinois Light Artillery, writes as follows to the *Chicago Medical Examiner* :—

"The most recent surgical information which I can present is that of the battle of Corinth. Orders were there given to amputate no thigh above the middle, without a full council, and then only in desperate emergency. This order was given in consequence of the horrible mortality of high amputations. The result was strikingly, but perhaps fallaciously, brilliant. Of all thighs amputated below, or at the middle, four-fifths were alive *and doing finely*, on the tenth day, when last heard from. This was among the Union troops. Among the wounded Secesh who fell into our hands the same rule was adopted, but the result was exactly reversed. *Four-fifths of similar cases among them died before the tenth day.* This difference in the two classes is due, I believe, to two causes: 1st. The Confederate troops were nearly in a state of starvation, many of them having only roasted green corn in their haversacks. 2d. It is probable that many of the most favorable cases for the operation contrived to crawl away and get carried off on the retreat. There may also be a natural difference in their power of endurance, for it is noticeable through this whole region that the inhabitants have a thin, sallow appearance, which contrasts strongly with the ruddy robustness of our soldiers. In most parts of this region, a ruddy native is a wonder, and a fat one could not be found at all."

DR. G. A. DAYTON reports, in the *American Medical Times*, two cases of tænia expelled by the use of pumpkin seeds. Dr. D. remarks, in regard to this remedy, that to make it almost a specific, "the seeds should be thoroughly bruised, so that the particles can come in contact with the head of the worm; also that fasting is absolutely necessary to enable the remedy to accomplish its work."

VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, DECEMBER 20th, 1862.

DEATHS.

	Males.	Females.	Total.
Deaths during the week	25	38	63
Ave. mortality of corresponding weeks for ten years, 1851—1861,	38.8	38.0	76.8
Average corrected to increased population	00	00	84.68
Death of persons above 90	00	1	1

Mortality from Prevailing Diseases.

Phthisis.	Croup.	Scar. Fev.	Pneumon.	Variola.	Dysentery.	Typ. Fever.	Diphtheria.
9	5	3	4	0	0	1	0

ERRATUM.—On page 399, line 2, for "Stratham" read *Statham*.

RECEIVED.—The Illustrated Physiological and Phrenological Almanac for 1863. Fowler & Wells, Publishers, New York.—On Medical Provision for Railroads, &c. Two Papers, by Edward S. F. Arnold, M.D., New York.

DEATHS IN BOSTON for the week ending Saturday noon, Dec. 20th, 63. Males, 25—Females, 38.—Anæmia, 1—disease of the bowels, 1—congestion of the brain, 3—inflammation of the brain, 2—bronchitis, 6—burns, 1—cancer of the breast, 1—consumption, 9—convulsions, 1—croup, 5—dropsy of the brain, 3—drowned, 1—scarlet fever, 2—typhoid fever, 3—gastritis, 1—disease of the heart, 1—infantile disease, 6—intemperance, 1—disease of the kidneys, 2—congestion of the lungs, 1—inflammation of the lungs, 4—marasmus, 2—old age, 1—paralysis, 1—premature birth, 1—puerperal disease, 2—teething, 1—unknown, 2.

Under 5 years of age, 32—between 5 and 20 years, 2—between 20 and 40 years, 19—between 40 and 60 years, 5—above 60 years, 5. Born in the United States, 51—Ireland, 7—other places, 5.